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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,096

01/17/2006

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EXAMINER

ROSATI, BRANDON MICHAEL

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,096	Applicant(s) IGAMI, TAKAZI	
	Examiner BRANDON M. ROSATI	Art Unit 4114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1-17-2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In response to the Preliminary Amendment filed on January 17, 2006, claims 1 and 2 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. On page 4, lines 1 and 3, the phrases "equivalent to A3003" and "equivalent to A7072" are indefinite because the examiner is not sure which characteristic property of the aluminum materials the core metal and the sacrificial anode material, respectively, have to be equivalent to. For the purposes of this examination the examiner is interpreting "equivalent to" to be a core metal and a sacrificial anode material that have the same elemental composition as A3003 and A7072 respectively.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinnaga et al. (Japanese Patent JP 2002-71286) in view of Kato et al. (Japanese Patent JP 11-80870) and further in view of Tanaka et al. (Japanese Patent JP 11-80871).

Regarding claim 1, Shinnaga et al. discloses an aluminum heat exchanger comprising a flat tube formed by using an aluminum strip (i.e. bar) that has a core material made of aluminum, coated with a brazing material on one surface, and a sacrificial anode layer on the other surface. Furthermore, the strip is bent, in the width direction, in such a way to form a tube so that the brazing material is on the outside surface and the sacrificial anode layer is located on the inner surface (Paragraphs [0010-0012]). It is noted that claim 1 is a product by process claim and that the product by process limitation does not limit the claim to the recited step, just the structure obtained by performing the step. Shinnaga et al. does not disclose the specific alloys used for the brazing metal, the core metal, and the sacrificial anode material, which included certain parentages of weight of certain elements. Also, Shinnaga et al. does not disclose using a brazing furnace to braze the heat exchanger. However, Kato et al. discloses a brazing metal which is an Al-Si alloy (Paragraph [0022]), a core metal which is an Al-Si alloy, wherein the Si is 0.3-1.0% by weight (Paragraph [0007]), and a sacrificial anode material which contains Mg in the range of

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0.3-0.6% by weight (Paragraph [0014]). It is noted that Al-Mg-Zn is a well known alloy which is commonly used as a sacrificial anode. Tanka et al. discloses an assembled heat exchanger such as a heater core radiator in which the heat exchanger structure has been secured by brazing with a flux in a furnace (Paragraph [0025]). It is noted that a typical radiator and heater core consist of many flat tubes disposed in parallel. Hence it would have been obvious at the time the invention was made, to one of ordinary skill in the art, to modify the teachings of Shinnaga et al. with the specific alloys of Kato et al. as well as the brazing technique as disclosed in Tanka et al. because using the specific alloys with various percentages of certain elements would strengthen the heat exchanger and increase efficiency. Using the brazing technique would allow for a more secure and better functioning heat exchanger, which would increase and improve heat transfer.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinnaga et al. (Japanese Patent JP 2002-71286) in view of Kato et al. (Japanese Patent JP 11-80870) further in view of Tanaka et al. (Japanese Patent JP 11-80871) and furthermore in view of Swartz (NPL Document).

Regarding claim 2, the combined teachings of Shinnaga et al., Kato et al., and Tanaka et al. disclose all the claimed limitations including a brazing metal consisting of an aluminum alloy in which Si is 6-13% by weight (Kato, Paragraph [0022]). Also, Kato et al. discloses a core material containing Si of 0.3-1.0% by weight. It is noted that the core material disclosed in Kato et al. is a well known equivalent to A3003 aluminum and the compounds disclosed in Kato et al. are compounds which are found in A3003. Furthermore, Kato et al. discloses a sacrificial anode containing Mg in the range of 0.3-0.6% by weight. However, the combined references do not

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teach using A7072 added with Mg, However, Schwartz discloses using A7072, which consists of Al, Mg, and Zn as a clad for aluminum alloys (Schwartz, p44, column 1). Hence it would have been obvious at the time the invention was made, to one of ordinary skill in the art, to modify the combined teachings of Shinnaga et al, Kato et al. and Tanaka et al. with the A7072 of Swartz because using A7072 with the specified amount of Mg would ensure the best functioning sacrificial anode and would thus improve the overall quality of the heat exchanger.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Scherer et al. (U.S. Patent No. 3,739,456) discusses sacrificial anodes. Davisson et al. (U.S. Patent No. 5,618,358) discusses the use of A3003 and its percentages.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M. ROSATI whose telephone number is (571)270-3536. The examiner can normally be reached on Monday-Friday 8:00am- 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe Cheng can be reached on (571)-272-4433. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BMR
1/31/2008

/Joe H Cheng/
Supervisory Patent Examiner
Art Unit 4114